Amendments to the Claims

Listing of Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A secondary electron detector, especially in a scanning electron microscope~~, **characterized in that** it is comprised of~~ comprising:

a detector chamber adapted to be coupled with a vacuum pump to produce a vacuum inside the detector chamber, the detector chamber comprising an interior and a plurality of walls separating the interior from a surrounding environment;

at least one source of bias voltage; and

a sensor [[(2)]] located in [[a]] said detector chamber [[(3)]] and having an active surface, ~~to which a vacuum pump (10) is coupled to produce a vacuum inside the detector chamber (3), the detector chamber (3) being closed in the wall~~

wherein one of said walls of said detector chamber is near to the active surface of the sensor ~~(2) by a diaphragm featuring~~ and is closed by an electrically conductive grid, ~~(11; 12)~~ said electrically conductive grid including a plurality of orifices having a high resistance to a transmission of gas and a low resistance to a transmission of electrons, ~~while all its remaining walls vacuum-tightly separate the interior of the detector chamber (3) from the surrounding environment, said diaphragm (11; 12) featuring the high resistance to the transmission of gas and the low resistance to the transmission of electrons being constituted by an electrically conductive grid (11) to which~~ said electrically conductive grid connected with the at least one source ~~(16, 17)~~ of bias voltage ~~is connected~~, said orifices ~~the low resistance to a transmission of electrons being achieved by~~ defining electron microlenses inside and in front of ~~each orifice (13) in said diaphragm (11; 12)~~ said orifices, said electron microlenses being created by an electrical field protruding through said orifices [[(13)]], said electrical field originating from a conductive coating ~~(15 and/or 8)~~ inside of the detector chamber [[(3)]], [[where]] and the conductive coating ~~(15 and/or 8) is~~ adapted to be connected to a voltage source ~~(17 and/or 9)~~.

2. (Currently Amended) The secondary electron detector of claim 1, ~~characterized in that~~ wherein the electrically conductive grid [[(11)]] is made of copper.

3. (Currently Amended) The secondary electron detector of claim 1, ~~characterized in that~~ wherein the electrically conductive grid [[(11)]] is constituted by a diaphragm [[(12)]] made of electrically insulating material and provided with said orifices [[(13)]], the diaphragm [[(12)]] being ~~fitted with the~~ including a first side near to the sensor, a first conductive coating [[(14)]] on the first side, ~~near to the sensor (2) and with the~~ a second side opposite to the first side, and a second conductive coating [[(15)]] applied to ~~its reverse~~ the second side, [[where]] the first conductive coating [[(14) is]] being electrically insulated from the second conductive coating [[(15)]].

4. (Currently Amended) The secondary electron detector of claim 3, ~~characterized in that~~ wherein the diaphragm [[(12)]] is a ~~kapton~~ polyimide diaphragm.

5. (Currently Amended) The secondary electron detector of claim 1, ~~characterized in that~~ wherein the source ~~(16, 17)~~ of bias voltage is a source of bias of 50 V to 2000 V.

6. (Currently Amended) The secondary electron detector of claim 5, ~~characterized in that~~ wherein the source ~~(16, 17)~~ of bias voltage is a source of bias voltage of 250 V to 700 V.

7. (Currently Amended) The secondary electron detector of claim 1, ~~characterized in that~~ wherein the sensor ~~(2) consists of~~ comprises a light-guide having an input and an output [[(4)]], ~~between whose input (6) and the electrically conductive grid (11)~~ and further comprising an ionization grid [[(25) is]] arranged ~~that is~~ between the input of the light-guide and the electrically conductive grid, the ionization grid adapted to be connected to [[the]] a source [[(26)]] of ionization voltage, [[while]] and the output of the light-guide ~~output~~ [[(4)]] adapted to [[leads]] lead to a [[the]] photo-multiplier input.

8. (Currently Amended) The secondary electron detector of claim 7, ~~characterized in that~~ wherein the input of the light-guide [[(4)]] is ~~at its input equipped~~ coupled with a scintillator [[(7)]], [[whose]] the scintillator including a surface ~~that is~~ near to the electrically conductive grid, ~~(11) is fitted with~~ and the surface of the scintillator having a conductive coating [[(8)]], ~~to which~~ adapted to be connected with a high voltage source [[(9)]] ~~is connected~~.

9. (Currently Amended) The secondary electron detector of claim 1, ~~characterized in that~~ wherein the sensor ~~(2) is constituted by~~ comprises a PIN diode.

10. (Cancelled)

11. (Currently Amended) The secondary electron detector of claim 1, ~~characterized in that~~ wherein the electrically conductive grid [[(11)]] is covered outside the detector chamber [[(3)]] with an input screen [[(18)]], ~~which is~~ the input screen adapted to be connected to a low voltage source [[(19)]] of 50 V to 500 V.

12. (Currently Amended) The secondary electron detector of claim [[11]] 1, ~~characterized in that~~ wherein the electrically conductive grid [[(11)]] is covered outside of the detector chamber (3) ~~covered~~ with an input screen [[(18)]], ~~which is~~ the input screen adapted to be connected to [[the]] a low voltage source [[(19)]] of 80 V to 150 V.

13. (Currently Amended) The secondary electron detector of claim 11, ~~characterized in that~~ wherein the input screen [[(18)]] is of hemispherical shape.

14. (Currently Amended) The secondary electron detector of claim 12, ~~characterized in that~~ wherein the input screen [[(18)]] is of hemispherical shape.